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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,568	11/09/2000	John Hermon-Taylor	117-319	1704

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EXAMINER	
MINNIFIELD, NITA M	
ART UNIT	PAPER NUMBER
1645	
MAIL DATE	DELIVERY MODE
06/22/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	09/646,568	HERMON-TAYLOR ET AL.
	Examiner	Art Unit
	N. M. MINNIFIELD	1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *50-74* is/are pending in the application.

4a) Of the above claim(s) *59 and 65-73* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *50-58,60-64 and 74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/20/00, 5/9/01, 12/14/10*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election of Group I, claims 50-58, 60-64 and 74 as they relate to the polynucleotide in the reply filed on April 13, 2011 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 59 and 65-73 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 13, 2011.

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

4. The use of trademarks has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

5. The disclosure is objected to because of the following informalities: This application contains sequence disclosures, see page 45, that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821(a)(1) and (a)(2), but no SEQ ID NO:. However, this application fails to comply with the requirements of 37 C.F.R. §§ 1.821-1.825.

Full compliance with the sequence rules is required in response to this office action. A complete response to this office action should include both compliance with the sequence rules and a response to the Non-Final Office Action set forth below. Failure to fully comply with ***both*** these requirements in the time period set forth in this office action will be held non-responsive.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 53-58 and 64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are directed to vaccines comprising a polynucleotide comprising SEQ ID NO: as well as methods of treating or preventing infection by *Mycobacterium avium* subspecies *paratuberculosis* or a disease caused by MAP in an animal or human, comprising administering the claimed vaccine to the animal or human. The claimed vaccine composition encompasses a DNA vaccine.

It is noted that the instant specification does not enable the claimed vaccine composition or the method of using it. There are no examples that set forth enablement of the claimed invention. Applicants have provided no declaration under 37 C.F.R. 1.132 or other relevant evidence has been made of record establishing the amount of experimentation necessary and insufficient direction or guidance is presented in the specification with respect to the claimed invention as previously stated. The relative skill of those in the art is commonly recognized as quite high (post-doctoral level).

The test of enablement is whether one skilled in the art could make and use the claimed invention from the disclosures in the application coupled with information known in the art without undue experimentation (United States v. Telectronics, Inc. 8 USPQD2d 1217 (Fed. Cir. 1988)). Whether undue experimentation is required is a conclusion reached by weighing several factors. These factors were outlined in Ex parte Forman, 230 USPQ 546 (Bd. Pat. App. & Inter. 1986) and again in In re Wands, 8 USPQQ2d 1400 (Fed. Cir. 1988) and include the following: unpredictability of the art, the art concerning DNA vaccines and the use of mouse models to

assay efficacy in humans is unpredictable. DNA vaccines have not been approved for use in humans and data from human clinical trials have not shown much promise. Whereas DNA expression plasmids have been shown to generate immune responses in humans, a protective (i.e. "vaccinated") result is unpredictable (Berzofsky et al, J. Clin. Invest., 113:1515-1525, 2004, in particular see page 1519, second column, "DNA vaccines"). DNA vaccines have not demonstrated any "...convincing efficacy in the prevention or treatment of infectious disease or cancer." (Restifo et al., Gene Therapy, 7:89-92, 2000, see abstract). Additionally, the translation of results in mouse models of disease to results in humans is fraught with unpredictability. See Gura (Science, 278:1041-1042, 1997) documenting that mouse models "...are not predictive at all", and Steinman et al. (Science, 305:197-200, 2004) discussing promising immunotherapy discoveries in mice that failed to translate to humans.

"Although clinical trials conducted so far have provided overwhelming evidence that DNA vaccines are well tolerated and have an excellent safety profile, the early designs of DNA vaccines failed to demonstrate sufficient immunogenicity in humans." (abstract, Lu et al, Expert Rev. Vaccines, 2008, 7/2:175-191) "Human testing of DNA vaccines started shortly after the discovery of DNA vaccines (it is noted that Lu et al, refers to two papers published in 1998). Unfortunately, the immunogenicity of DNA vaccines in humans was significantly lower compared with results obtained from preclinical DNA vaccination studies. In responding to this somewhat unexpected setback following the initial explosion of interest in DNA immunization technology, new strategies have been developed to improve or amplify the immunogenicity of DNA vaccines." (p. 175; see also, p. 186-188, Lu et al, Expert Rev. Vaccines, 2008, 7/2:175-191) The state of the art regarding DNA vaccination, while represented voluminously in the literature, is poorly developed. No DNA expression vector to date has been shown to be efficacious in vaccination of humans.

While the level of skill in the art is high, the unpredictability of the art, lack of guidance, broad scope of the claims and poorly developed state of the art would require that undue and excessive experimentation would have to be conducted by the skilled artisan in order to practice the claimed invention. Given the above analysis of the factors which the courts have determined are critical in determining whether a claimed invention is enabled, it must be considered that

undue and excessive experimentation would have to be conducted by the skilled artisan in order to practice the claimed invention.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 50-58, 60-64 and 74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are vague and indefinite in the recitation of "...a polynucleotide sequence which is degenerate as a result of the genetic code to the polynucleotide of SEQ ID NO: 1". It is not clear what the metes bounds of this phrase are.

10. No claims are allowed. It is noted that the polynucleotide sequence SEQ ID NO: appears to be free of the prior art.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. M. MINNIFIELD whose telephone number is (571)272-0860. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary B. Nickol can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

N. M. MINNIFIELD
Primary Examiner
Art Unit 1645

/N. M. MINNIFIELD/
Primary Examiner, Art Unit 1645